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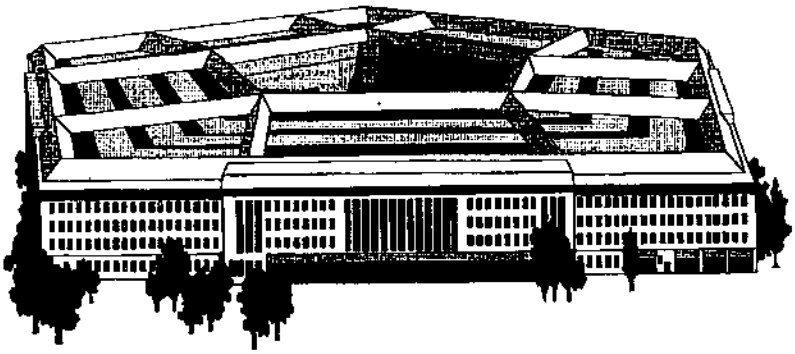

White Paper

An Affordable, Efficient, and Open Alternative Approach to Paperless Acquisition of Spare and Replacement Parts for Navy / Department Of Defense (DOD) Weapons Systems Components / Parts

Prepared for the NAVSEA PEO (ARBS) & EA-21 Office
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White Paper

Title:

An Affordable, Efficient, and Open Alternative Approach to Paperless Acquisition of Spare and Replacement Parts for Navy / Department Of Defense (DOD) Weapons Systems Components / Parts

Purpose:

The purpose of this Point paper is to alert the reader that an alternative "Seamless Virtual Product Engineering and Paperless Acquisition Workflow System" exists, which uses a new Electronic Format (the Electronic Product Digital Definition Set [EPDDS]) for product definition, and a true Intranet Tool Suite (Open Text, Inc.'s "LIVELINK" Intranet) for Information / Product Data / Supply /Knowledge Management, and as a vehicle for Electronic Commerce.

This system is being developed for demonstration, by the Crane Division, Naval Surface Warfare Center, Crane, Indiana as a part of the Defense Logistics Agency (DLA) Computer Assisted Technology Transfer (CATT) Program. This demonstration involves the Federal Aviation Administration (FAA) Logistics Center and Mike Monroney Aeronautical Center Office of Acquisition, both in Oklahoma City, Oklahoma, and a SME Electronic Product Manufacturer in Indiana.

The DLA CATT Program is a National Re-invention Laboratory initiative that represents a unique collaborative effort between government, industry, and academia. The goal of the CATT Program is to reduce the cost of parts for the Department Of Defense (DOD) by attaining certain objectives.

To achieve these objectives, the CATT Program uses a Virtual Model involving Small and Medium Manufacturing Enterprises (SME) / companies who will collectively bid on the parts solicited via a true Intranet using digital product definition data for a Circuit Card Assembly (CCA), previously defined with approximately 200+ aperture cards from the Original Equipment Manufacturer.

The purpose of this Point Paper is also to convince the reader that

this new alternative "paperless acquisition" system provides both a business and technical solution to all involved, including both the government and private sector personnel associated with the acquisition process.

Another purpose is to convince the PEO (ARBS) / EA-21 Office to support a demonstration of the alternative "paperless acquisition" system at a selected activity for a critically needed electronic spare or replacement part, which will justify the inclusion of this alternative "paperless acquisition" system in the Navy Standard Procurement System (SPS).

Background:

CALS

Beginning with the introduction of CALS (then Computer Aided Logistics Support / and now Continuous Acquisition and Life-cycle Support) within the Department Of Defense, and within the Navy, solutions to both business and technical problems primarily included the development and application of CALS standard computer hardware and software, as the primary thrust.

This created some of the problem due to the fact that CALS was conceived to be only a strategy for achievement of three basic goals: (1) decrease cycle time, (2) improve product / service quality, and (3) reduce system / product life-cycle costs. CALS was not originally to become a mandatory "hardwired" and programmed solution for everyone to adopt.

In addition, CALS Standards and Specifications were also developed to control the process architecture that existed, plus what was being developed in the CALS environment. The idea was that everybody had to have the same hardware and software to get the job done, while using the same process.

This lead to many problems with regard to integrating new hardware and software with existing systems and achieving true interoperability with true interconnectivity.

The abundant availability (proliferation) of new technology and the ever-frequent entry of newer technology, provided an unstable environment, when stability was really needed for the move to a CALS common environment within the Navy and DOD. There were the "haves" and the "have-nots". He who had the gold could buy the latest technology for CALS applications, from that single point of view, as influenced by that technology awareness of the day. Once the technology (usually computer hardware and software) was selected, the course of action was in concrete, and that vectoring was driven by the "contract of the day" usually to consulting firms, the amount of funding available, and the original plan. Competition for CALS related funding was and is still very fierce within the DOD and the Services.

With the myriad of organizational elements within the DOD, and the "bureaucracy", with its "stovepipes" over "ricebowls", and frequent

"changing of the guard" within the "beltway", the original CALS concept of operation had many obstacles to overcome.

This is still somewhat evident today when one browses the CALS Websites / Home Pages of the DOD and the Services. The use of the World Wide Web has greatly improved the needed move to a more common, less restrictive, more open CALS environment, where information can become the key product, not mandatory practices, hardware, and software.

Implementation in accordance with the original doctrine proved to be very difficult, and was compounded by the availability and flow (direction) of funding from the top down to the working levels responsible for doing the work in the CALS environment.

Product Definition

Included in the CALS environment were efforts to develop a standard "neutral" format for defining new products using Computer Aided Design (CAD) technology. Initial Navy / DOD efforts with the Product Definition Exchange Specification (PDES) development migrated to the International Standard for the Exchange of Product Model Data (STEP) arena, in an effort to develop a universal neutral CAD format for use by product designers and product manufacturers.

At the present time, STEP has little application for use in the procurement of spare and replacement electronic parts from small and medium sized manufacturers.

There were few efforts, if any, to deal with the problem with "legacy" product technical data packages (TDPs consisting of microfilm aperture cards of original equipment manufacturer (OEMs') engineering drawing packages. The great majority of available aperture card technical data packages for spare and replacement parts are inadequate for use in full and open competitive procurement. This inadequacy of "legacy" product technical data is based upon inadequate technical content (product definition, references (specifications and standards), materials, processes, manufacturability problems, process controls, quality assurance / certifications), completeness, configuration management problems, dimensional accuracy (pre-CAD situations), format, and legibility of the aperture card image / hardcopy.

The reader should be reminded of the basic problem with the use of aperture cards made from the OEM's original "build-to-print" engineering drawings of the parts now needing spare and replacement part support for the Navy / DOD.

Even if the government acquires the original engineering drawings / aperture card technical data package, the government may not have sufficient information to use the package for full and open competitive procurement. In most instances, the OEM uses the original engineering drawing package

one time to produce his internal and proprietary "manufacturing paper" / process sheets which are used for manufacturing.

The OEM maintains configuration management through the use of the "manufacturing paper" and not the original engineering drawing package. When the government uses the "supposed to be" Level III drawing package / aperture card set for procurement there are usually questions by the small and medium small businesses / manufacturers as they are reviewing the aperture cards / print-outs in preparation for making a quote.

When the small businessperson finds a note on a drawing that says – "Make this part in accordance with the OEM's Manufacturing Process Manual XXX", a call is usually made to the OEM in order to get the information. The OEM usually does not / will not provide the new prospective bidder any information requested.

A call to the procurement office usually leads to a "blind alley". Therefore, in most instances the small business does not respond to the solicitation due to lack of information / technical content.

In many instances, the small businessperson has to pay sometimes as much as $100-$200 to get hard copies made of the aperture cards received. In many instances the small businessperson cannot read 10-15% of the aperture cards received. In many instances, the small business person is unable to acquire / obtain legible copies from the government procurement office in a timely manner, and based upon having a complete and legible product technical data package as a baseline for the quote.

It has been concluded that the best "neutral file" for "legacy" electronic part Computer Aided Manufacturing (CAM) is not a STEP file, but is something like a EPDDS (Electronic Product Digital Definition Set) file.

JEDMICS

EDMICS (Engineering Drawing Management Information and Control System) was developed to improve the situation, but had many start-up problems. EDMICS was a repository for aperture card images. Aperture Card in and Aperture Card out. A proprietary and costly hardware and software system was required for processing and storage of the digital images. The Aperture Cards were digitized upon receipt, cleaned up and stored digitally. Searching and recalling of digital images was slow. Upon demand, EDMICS provided Aperture Cards printed from the stored aperture card images in the EDMICS. The basic problems with the use of Aperture Cards were never addressed with EDMICS.

JEDMICS (Joint Engineering Drawing Management Information and Control System) applied new technology to EDMICS and made improvements in the functionality of the process. Aperture Card / Digital Image in and Aperture Card / Digital Image out. JEDMICS provided a Personal Computer (PC) solution to the process. Searching and recalling of digital images for viewing / printing is still slow in today's environment. There are still some proprietary hardware and software requirements of JEDMICS, which are

behind today's available "open" technology, with regard to interoperability on the World Wide Web, and cost to the hosts and users.

JEDMICS now provides digital image files of aperture cards to procurement agencies for use in procurement of spare and replacement parts for "legacy" systems. A serious problem still exists to prospective bidders with regard to aperture card digital images as they still have the potential inadequacies associated with OEM engineering drawings.

Because of the problems with inadequate technical data residing in aperture card format, regardless of whether digitized or in hard copy, many capable private sector small manufacturing enterprises will no longer quote on Navy / DOD / Government work.

A review of all Navy / DOD procurement organizations will confirm this fact that inadequate aperture cards or digitized images of aperture cards are still being used.

Even, when work is successfully performed, many small businesses have elected to no longer Navy / DOD work because of the excessive delay in getting paid for work accomplished and delivered / received.

JCALS

The DOD Joint CALS (JCALS) initiative, in its initial phases, targets the comprehensive support of "technical manuals" for the services. JCALS is being applied to many areas within the DOD and the Navy.

The Defense Logistics Agency (DLA) is using JCALS for some workflow automation of procurement folders at the Defense Supply Center, Columbus, Ohio (DSCC), for example. JCALS is currently a UNIX based client server system managed by the Army (Executive Agent) at Fort Monmouth, New Jersey. The prime contractor for JCALS is the CSC Corporation. Work is currently underway to convert JCALS to a true World Wide Web enabled Windows NT system. Other business and technical process can be supported by JCALS in the near future.

The Navy JCALS effort has a much greater scope of focus and application for the JCALS tool suite. JCALS will be included in the Navy SPS initiative. The Navy JCALS Tool Suite consists of the following tools / utilities: (1) Data Base, (2) Administration, (3) Electronic Office, (4) Technical Manual Tools, (5) Sponsor Owned Material (SOM), (6) Material Requisitions, (7) Logistics Support, (8) ECP Workbench, and (9) Navy Tools.

Electronic Commerce

On the acquisition side of the Navy / DOD operations, much work and funding has been expended toward establishing an electronic commerce capability. A CALS environment was to include electronic commerce and Electronic Data Interchange (EDI). Initial attempts in establishing an electronic commerce capability using Electronic Data Interchange (EDI) met with little success.

The Federal Acquisition Computer Network (FACNET) was developed and implemented with problems. One of the

problems has always been with the development of the ANSI X12 EDI Standard "841" Transaction Set Format for Product Technical Specifications. The problem still exists.

Most electronic commerce efforts included / includes the use of digitized aperture card files of "legacy" aperture card images of the engineering drawing packages for the specific product / part required, with inadequacies included.

Recently, the mandatory use of FACNET to achieve "paperless acquisition" was removed by Executive Order, and direction was provided to use any acceptable means / system to meet the original goals and objectives first established for implementation of electronic commerce / "paperless acquisition". This theme carried over into the development of the DOD / Navy Standard Procurement System (SPS).

Islands of Automation

There has been great difficulty within the DOD in organizing and implementing standard business and technical support systems over the last 12-13 years. The problem has been recognized and many sincere attempts have been made by all involved. The term "Islands Of Automation" was recognized early on as one of the cultural and real problems within the DOD and the Government support structures / organizational elements, as a whole.

The bureaucracy within the DOD and the nature of the "beast" has resulted in a lot of planning and development for seamless systems, however, due to the situation and available technology, it has been very difficult to achieve the goals and objectives of CALS. Maybe the goals and objectives of CALS are too broad in scope and excessively restrictive with regard to technology use to solve existing and future problems.

Acquisition Reform

The recent DOD initiative entitled Acquisition Reform has attempted to apply the three CALS objectives [(1) decrease cycle time, (2) improve product quality, and (3) decrease product life-cycle costs] to the acquisition process.

The obvious elements which included the elimination of many military specifications and standards as requirements, the movement to Commercial Off The Shelf (COTS) hardware and software, the move to performance specifications, etc., have not solved the existing problems with improving the full and open competitive procurement of critically needed spare and replacement parts for "legacy" weapons systems / components. "Legacy" product technical data which currently has to be used for procurement, especially "build-to-print" product technical data packages require revision (upgrade / enhancement) to eliminate

COTS

The definition and procurement of COTS items is a critical problem, in itself. There will be many instances where COTS substitutes for existing Circuit Card Assemblies (CCAs) / Printed Wiring Assemblies (PWAs) cannot be found. In these situations, the only thing that defines the part is a "legacy" electronic "build to print" or "performance" technical data package

that exists on an aperture card technical data package. There are many unanswered questions regarding COTS issues and policies.

A standard COTS Product Digital Definition Set (COTSPDDS) could be developed which would go a long way in best defining COTS product requirements in a military environment.

DOD / Navy Standard Procurement System (SPS) and the NAVSEA Project Executive Office (PEO) for Acquisition Related Business Systems (ARBS) / Electronic Acquisition (EA-21) Office

The relatively new PEO (ARBS) and EA-21 Office has been created to develop and implement a Navy End-To-End ***Paperless Acquisition*** System by January 2000, using the Standard Procurement System (SPS) baseline product as a cornerstone.

The DOD defined SPS has been adopted by the Navy and work is ongoing to implement the concept using SPS hardware and software as integrated within various Navy Claimants. It is the goal to achieve Full Operational Capability (FOC) of SPS, after key operational performance parameters have been successfully demonstrated, by the Claimants.

This includes augmenting the baseline SPS product and developing / implementing front end and back end electronic products for a "paperless acquisition" system. Additional responsibilities are to develop and manage interfaces in the following categories: (1) unique interfaces over and above those originally contracted for as a part of the baseline SPS product, (2) changes to interfaces and/or new interfaces resulting from augmented SPS product, (3) universal interfaces to allow SPS to function with front end / back end electronic components, and (4) site specific interface requirements to implement a paperless acquisition system. Another responsibility is to expand SPS to the entire Acquisition Community.

The Navy PEO (ARBS) and the EA-21 Office also have the responsibility to identify other "best practices" in the area of "paperless acquisition". Such "best practice" systems can be included in the SPS and then would be available for use by the Acquisition Community.

The PEO (ARBS) and the EA-21 Office are extremely aware of and sensitive to the above past and previous CALS and related initiatives which, in part, have been "drivers" toward gearing the government / DOD toward "paperless acquisition". This includes those ***Acquisition Reform*** efforts and those efforts involving ***Business Process Re-engineering (BPR)*** efforts.

The following alternative solution to establish a seamless business and technical capability for "paperless acquisition" is currently being studied for inclusion into the Navy SPS.

A Proposed Alternative Solution for "Paperless Acquisition":

The Crane Division DLA CATT Program Seamless Virtual Product Engineering and Paperless Acquisition Workflow System Using Digital Product Definition Data and Intranets

The Crane Division concept of an ideal "paperless acquisition" system is very wide in scope as it includes a product engineering "front end", as integrated with an Electronic Vault / Repository containing Digital Product Definition Data optimized for electronic commerce, and integrated with very user friendly electronic commerce vehicle, all running on a very functional true COTS Intranet.

The "New" Electronic Product Digital Definition Set (EPDDS), a New Method / Format for "Build-To-Print" Electronic Product Technical Data Packages:

The key to success for acquisition of problem spare and replacement parts for "legacy" military systems lies in the upgrade, enhancement, reformatting, and digitization of existing hardcopy and aperture card images of available product technical data.

WWW Driven Open Intranet Solutions:

Since the time of the latest CALS, JEDMICS, JCALS, and SPS initiatives began, there has been a real paradigm shift in available related technology, as driven by the Internet / World Wide Web (WWW), and aided by new software tools. These new software tools do not require that everyone have the same computer hardware, software, and internal process architectures, to perform concurrent engineering, in a virtual environment, while allowing for very detailed workflow automation and project collaboration on any business or technical endeavor.

Three years ago, this was not the situation. Point solutions required the integration of many hardware items and software packages into a single "seamless" process architecture system. This was / is an almost impossible task due to the inherent problems with software integration and configuration management, in addition to the problems with interconnectivity and interoperability problems with the various hardware items involved.

Three years ago, the Crane Division, Naval Surface Warfare Center, performed a study to determine the best approach to Configuration Management of a major Navy weapons system, the AN/SQQ-89 Antisubmarine Warfare (ASW) System. The Crane Division had the assignment for formal configuration management of the AN/SQQ-89.

The plan was to procure a commercially available system that had the functionality to automate those formal configuration management duties for which the Crane Division had the responsibility to support for the Naval Sea Systems Command customer. The Crane Division was providing formal, "manually supported" configuration management for the AN/SQQ-89 system

using an expert / journeyperson team of nine (9) Crane Division employees and five (5) contractor support personnel.

Approximately thirty (30) commercial configuration management (CM) / product data management (PDM) software packages were reviewed in detail over a nine (9) month time period. Based on any of the "shrink wrapped" software systems inability to perform all necessary configuration management functions for "legacy" product technical data, such as properly handling non-sequential revisioning , for example, non of the systems could be approved for use. The systems evaluated were too inflexible, and would not meet the required business practices for configuration management. The systems were cost prohibitive, too proprietary, and not adequately adapted for use on the World Wide Web (WWW), a mandatory feature.

About the same time of the end of the evaluation of the 30 CM / PDM systems, the functionality of the WWW via true Intranets, for information / knowledge management, library functions, search functions, workflow automation, and project collaboration really increased, overcoming the functionality of any of the client-server CM / PDM systems evaluated.

A decision was made to not procure any of the commercial CM / PDM systems and focus on adapting the use of the WWW for the CM / PDM needs. At the same time, the Crane Division became aware of the then ODESTA Corporation "LIVELINK" Intranet product for Information Management using a true Intranet process architecture on the WWW, giving many more benefits than the commercial client-server CM / PDM systems, at a much lower user cost.

The "coming" of the Web enabled Intranet Information / Knowledge Management System spelled doom for many of the very structured, client-server, non-Web enabled commercial CM / PDM systems.

ODESTA has since become Open Text., Inc. and the "LIVELINK" Intranet product has since become the "de-facto" Global standard, and leader in the information / knowledge management field for World Wide Web (WWW) enabled solutions.

The Open text, Inc. "LIVELINK" Intranet solution for Information / Knowledge Management is currently one of the best systems available for "business process re-engineering". "LIVELINK" is a very functional solution which facilitates full use of the WWW for automating workflows and allowing for project collaboration over the life-cycle of a "task" / "project" / "program".

As a member of the DLA CATT Program Executive Board and as a CATT Program Deployment Site, the Crane Division developed a Phase IV Proposal to best demonstrate an alternative solution for the goals and objectives of the DLA CATT Program.

The inclusion of the Federal Aviation Administration (FAA) Logistics Center and the FAA Mike Monroney Aeronautical Center Office Of Acquisition into the Crane Division sponsored demonstration, created a real work scenario in which a real spare part, having an inadequate product technical

data package for procurement / manufacture, was processed in a digital environment, through the requisitioning process to and through the manufacturing process, via a new and unique electronic commerce process using a simple but effective COTS Intranet vehicle.

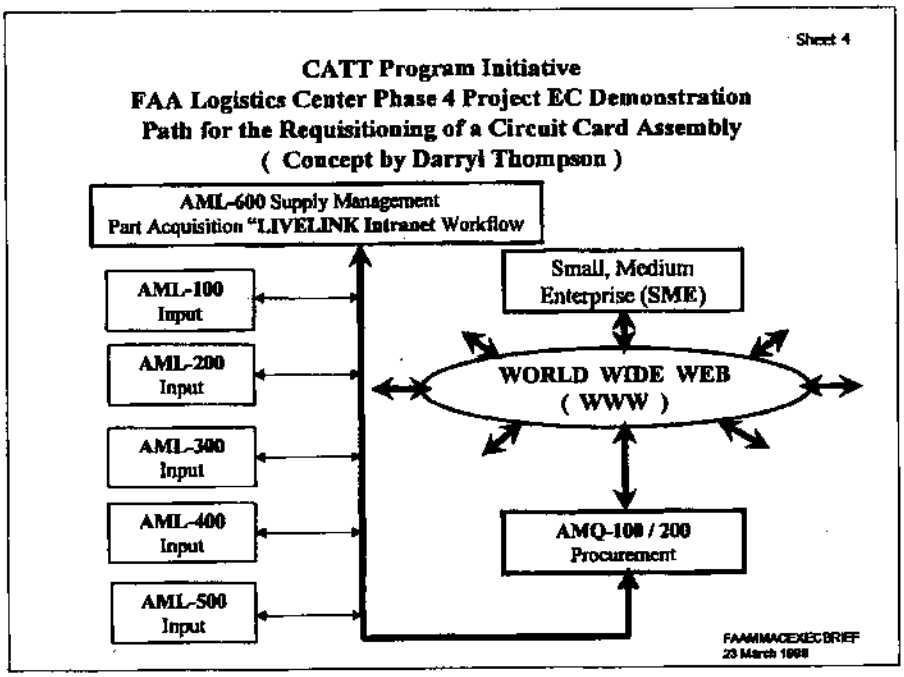

Figure (1) is a schematic diagram of the proposed FAA Logistics Center Supply Management process used as the basic architecture for the demonstration.

This simple diagram was developed in a meeting at the FAA Logistics Center based on a Business Process Re-engineering (BPR) session which lead to:

(1) the development of automated work flows for retrieval of digital electronic product technical data package (the Electronic Product Digital Definition Set (EPDDS)) from an electronic vault / repository,

(2) development of an electronic requisition for procurement,

(3) virtual staffing of the requisition for comments / input / approval

(4) electronic transmission of requisition with the digital / electronic product technical data package attached to the FAA Office of Acquisition for

processing for electronic commerce using an FAA Office of Acquisition Website / Home Page on a World Wide Web (WWW) enabled Open Text, Inc., "LIVELINK" Intranet as the vehicle for the solicitation.

(5) browsing of the FAA Office of Acquisition Home Page on which the EPDDS is displayed by prospective bidders

(6) downloading of the solicitation and EPDDS file by the prospective bidders

(7) bidders asks questions concerning the solicitation and / or EPDDS product technical data package

(8) bidders questions are answered by the FAA Office of Acquisition or the FAA Logistics Center Engineering personnel

(9) bidder prepares bid / quote and submits bid electronically via the Intranet

(10) contractor bid is evaluated by the FAA Office of Acquisition and the FAA Logistics Center

(11) virtual on-line, real-time pre-award conference

(12) contract award notice made by the FAA Office of Acquisition

(13) virtual on-line real-time post award conference

(14) on-going contract technical support, as required and requested

(15) final contract pre-delivery on-line real-time conference

(16) shipment notice by contractor

(17) receipt of contract deliverables by the FAA Logistics Center

(18) receipt inspection of delivered products by the FAA Logistics Center

(19) approval for payment of contract work (credit card)

(20) electronic Intranet / Internet payment for contract work

(21) notification of receipt of payment by the contractor

(22) close-out of contract

(23) input to FAA Logistics Center Supply Management / Inventory Management System

Any sequential and parallel process step can be mapped to a structured workflow which can be tied to an organizational element and / or to an individual for execution of predetermined linear responsibilities.

Steps (1) – (23) can be reconfigured / revised, or added to, immediately by the Intranet systems administrator who would have the

authority to make changes based upon an authorized system change request from higher authority, which would also become a system documented input for the corporate memory / audit trail.. The following vu-graphs provide additional information concerning the process.

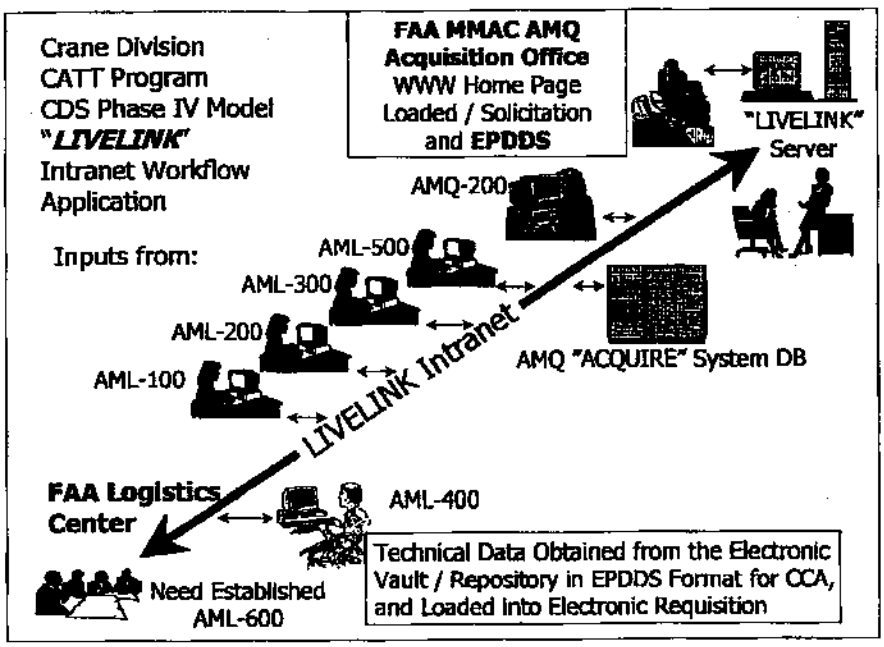

Figure (2) graphically shows the virtual, seamless Intranet based workflow at the FAA Logistics Center in getting the "paperless" requisition for a spare / replacement Circuit Card Assembly (CCA) from the Supply Management function to the FAA Mike Monroney Office of Acquisition. This process architecture provides a means for all organizational elements / personnel involved to have a structured workflow map on which to document action.

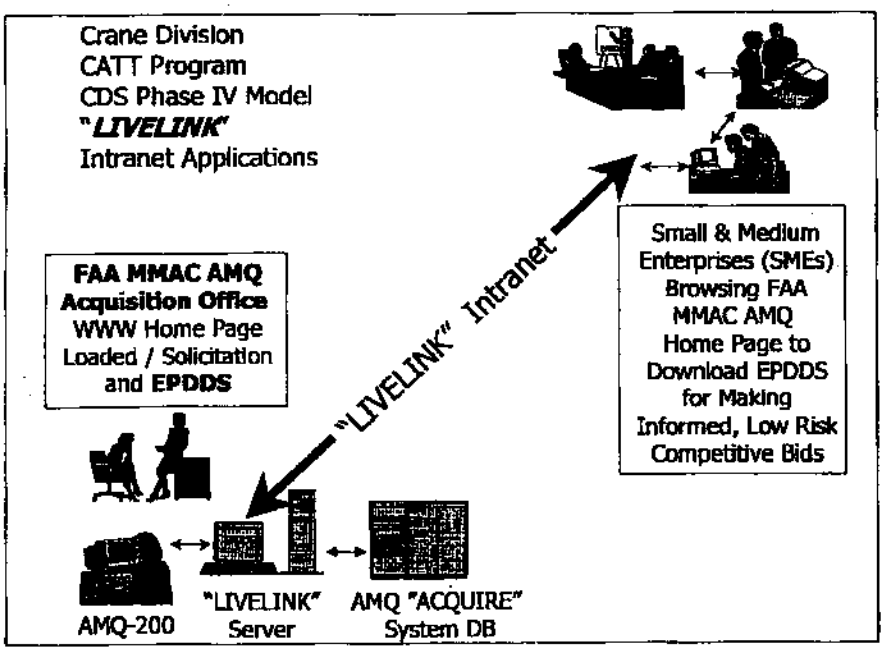

Figure (3) graphically shows the completion of the virtual seamless Intranet based workflow of the electronic commerce aspect of the "paperless" acquisition process. This graphic shows the access of a small business to the FAA MMAC AMQ Acquisition Office Home Page / Website on which the solicitation for the TV Sweep & Burn Protect Circuit Card Assembly (CCA) Electronic Product Digital Definition Set (EPDDS) is located.

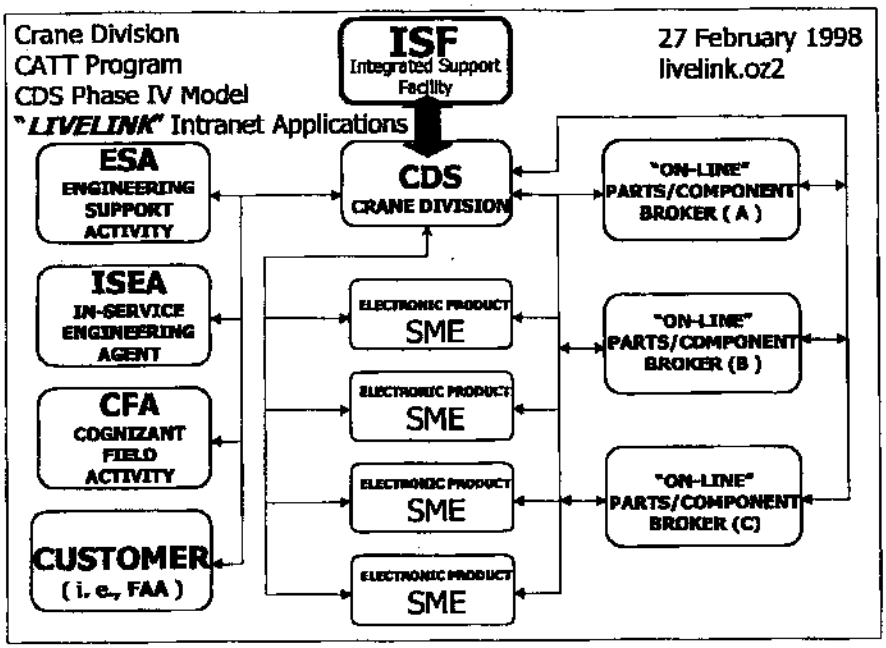

Figure (4) depicts the scope of the World Wide Web (WWW) based Intranet with regard to how a seamless virtual product engineering / acquisition engineering / electronic commerce / manufacturing enterprise would function on the Intranet to be demonstrated.

In this schematic diagram, an activity like the Crane Division, naval Surface Warfare Center, or the FAA Logistics Center / FAA Mike Monroney Aeronautical Center Office of Acquisition could be in on-line / real-time contact with engineering agents
And customers while putting out an electronic solicitation for the complete "build-to-print" job, while soliciting for components parts kits from "brokers" who would provide the parts to the small electronic product manufacturer if so decided by the manufacturer or by the government / DOD. In many instances, the small manufacturer would rather not take the responsibility to find and acquire the parts required for fabrication of the Circuit Care Assembly.

In many instances, the Crane Division, with its Diminished Manufacturing Sources (DMS) Technical Center and capability to locate electronic parts and components, the Crane Division can provide a value added service to the acquisition office and the prospective bidders by locating scarce parts and making them available to the bidders.

In this scenario, electronic parts / components brokers can also issue on-line / real-time parts kit quotes (price and delivery) to all the prospective bidders, for consideration. This truly is an acquisition reform breakthrough.

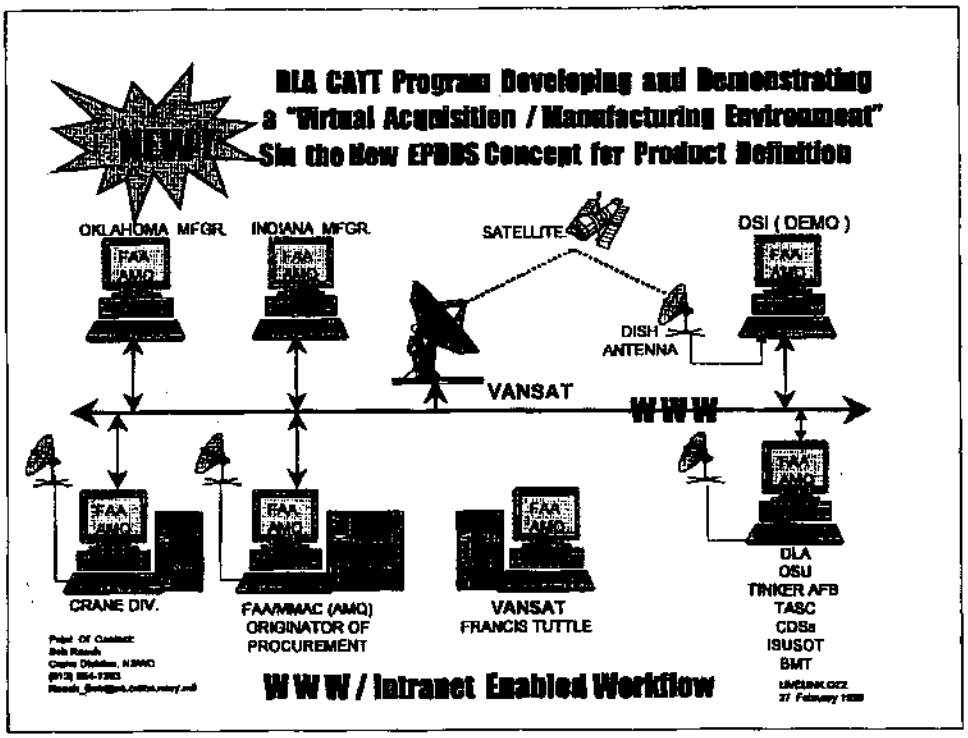

Figure (5) is a schematic of the networks being established for the CATT Program Phase IV Demonstration. This shows the Intranet to be established and all of the CATT Program Participants who will have the opportunity to "observe" what is going on with the demonstration workflow.

The participants are:

The Crane Division, Naval Surface Warfare Center, the manager of this CATT Program Deployment Site (CDS) Demonstration. The FAA Logistics Center and the FAA Mike Monroney Aeronautical Center Office of Acquisition, a CDS and the customer for the demonstration, and originator of the procurement of a CCA using the EPDDS. Diversified Systems, Inc. (DSI) a small, ISO-9000 Certified electronic product manufacturer

The following are CATT Program participants: the Defense Logistics Agency (DLA) with the Defense Supply Center Richmond, VA, the CATT Program Manager and the Defense Supply Center Columbus, OH, the cognizant DLA organization for electronic CCAs and components; the Oklahoma State University (OSU), a CDS; the TINKER AFB (Oklahoma City – Air Logistics Center (OC-ALC)), the CATT Program Technical Manager; TASC, Inc., the CATT Program prime contractor and Manager of the CATT Program Deployment Sites (CDSs); the Indiana State University / School of Technology, a provider of technical support to the Crane Division for this Demonstration; the Indiana Business Modernization & Technology Corporation (BMT), a State of Indiana small business facilitator; and the other CATT Program

Deployment Sites (CDSs) / Participants: Francis Tuttle VOTEC, VANSAT Service Provider; Dayton T. Brown, Inc.; Oklahoma Aerospace Contracting Assistance Center (OACAC); OSU-Okmulgee; North Eastern Oklahoma Manufacturers' Council (NEOMC); Structural Dynamics Research Corp. (SDRC); TRW, Inc.

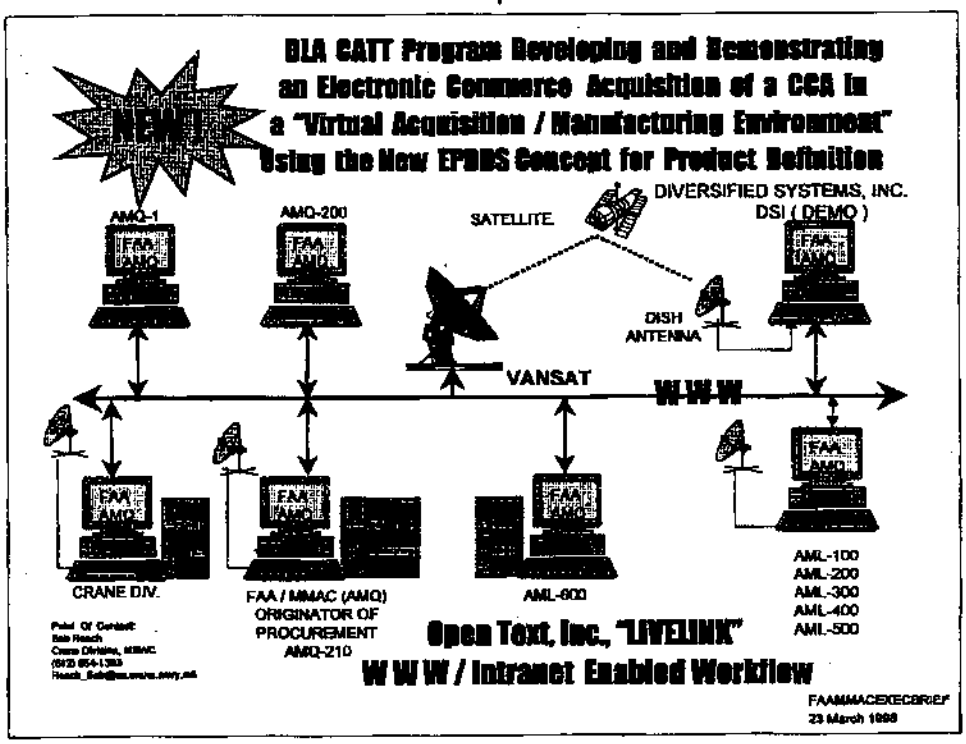

Figure (6) is the same schematic as Figure (5), however, it depicts the participants in the supply management and "paperless acquisition" workflow to be used in the Demonstration for the purposes of this Demonstration, only one SME (Small, and Medium Enterprise) will be used in the electronic commerce workflow, which will demonstrate the functionality of the Open Text, Inc., "LIVELINK" Intranet.

One of the goals of this demonstration is to show and confirm that, in many instances, the use of the Electronic Product Digital Definition Set (EPDDS) and process architecture, which includes "LIVELINK" Intranet, will best provide a vehicle for any DOD / Government agency to establish a comprehensive "paperless acquisition" system for complex electronic circuit card assemblies (CCAs) / printed wiring assemblies (PWAs) / electronic modules (EMs), especially when only inadequate "legacy" electronic product technical data exists in aperture card / hard copy format.

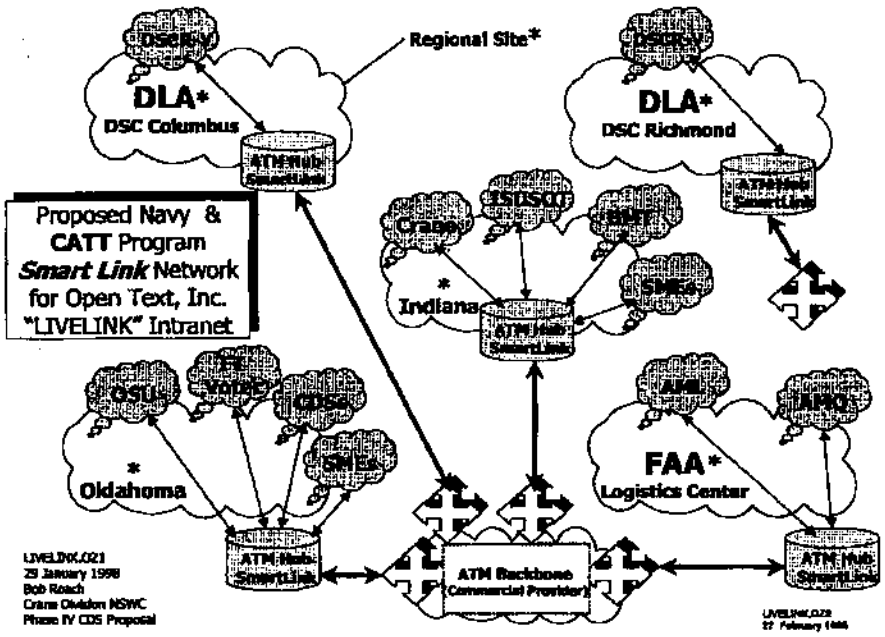

Figure (7) is for the computer network technicians and engineers. This shows the proposed Open Text, Inc., "LIVELINK" Intranet running on the Navy "SMARTLINK" network for the purpose of this CATT Program Demonstration with the FAA Logistics Center and the FAA Mike Monroney Aeronautical Center Office of Acquisition. This networking arrangement will confirm that the proposed process architecture can
effectively run on the approved Navy "SMARTLINK" network. Customer / User security systems can be anything the Customer / User requires and is willing to pay for in such an application. Only non-classified and non-business sensitive information and data will be available in the solicitation. The use of "LIVELINK" will provide for confidentiality between the FAA Mike Monroney Office of Acquisition and the specific businesses (enterprises) interested in bidding on the solicitation / and those enterprises actually bidding on the solicitation.

In establishing the "LIVELINK" Intranet, ***privileges*** are assigned to all "LIVELINK" Intranet users, including each small business interested in bidding on the solicitation. These ***privileges*** include the "*linear responsibilities*" required / assigned by the procurement office.

For example, one small business would not be able to access / see what the bid was by any other small business was quoting for that specific solicitation. In addition, all questions / communications between the procurement office and each small business involved would be kept confidential.

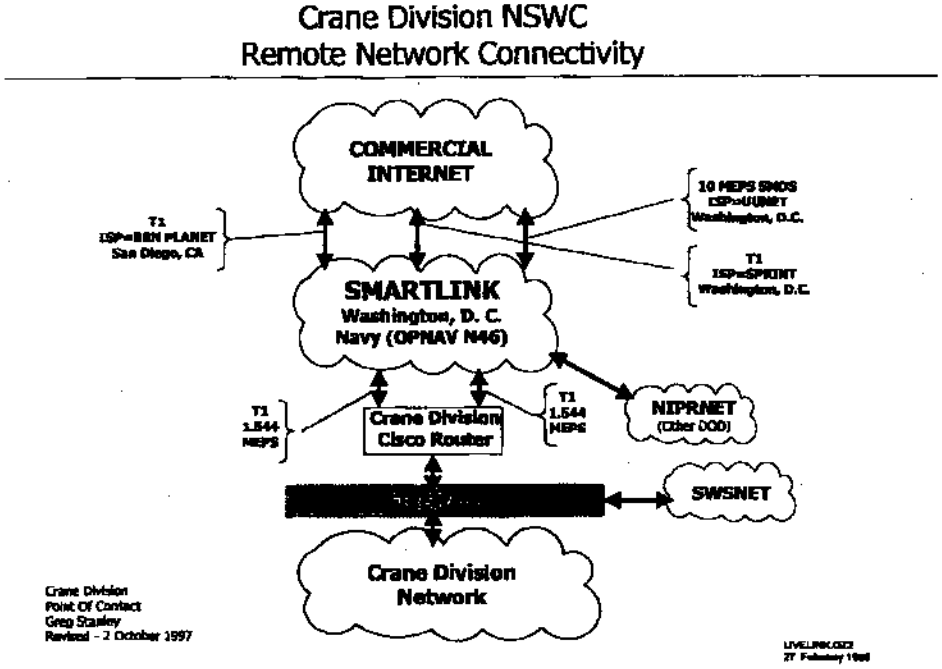

Figure (8), again is for computer network technicians and engineers. This shows the connection from the Crane Division to the "outside" network environment. Any DOD or government agency will have a similar network architecture through which the Open Text "LIVELINK" Intranet can operate in a secure mode.

Specific network security protocol would be up to the customer / user based upon DOD / government agency requirements. Any security scheme can be adapted to the proposed CATT Program architecture featured in this Demonstration model. Specific personal security methodology / technology can be adapted as desired.

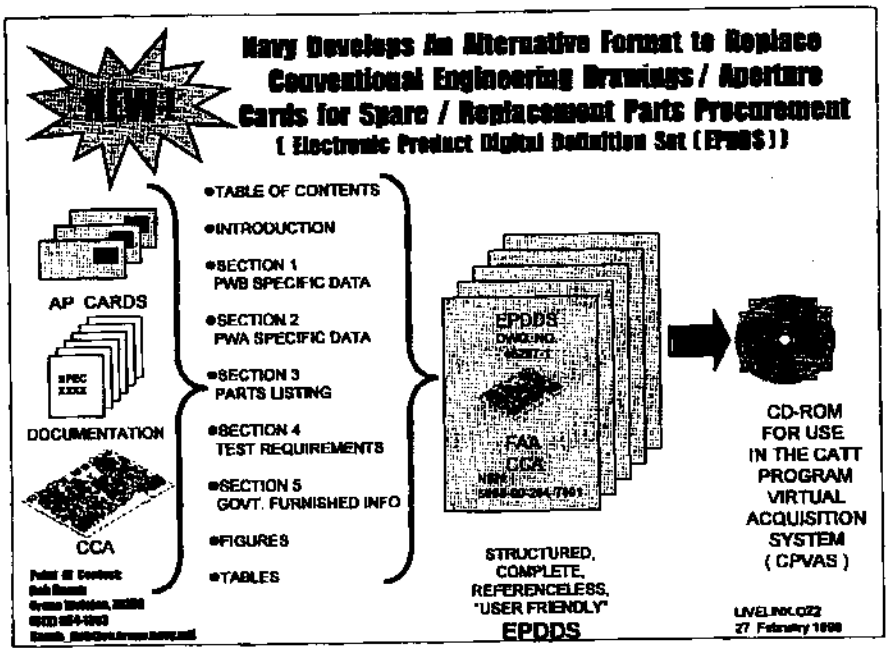

Figure (9) is a diagram of the most important feature of the CATT Program Phase IV Demonstration (***Seamless Virtual Product Engineering and Acquisition Workflow Development & Operation Using Digital Product Definition Data and Intranets / World Wide Web / Extranets***).

This most important feature is the Electronic Product Digital Definition Set (EPDDS).

Since the thrust of this demonstration is to develop an alternative "paperless acquisition" system which will facilitate electronic commerce with small and medium electronic product manufacturers, the key factor recognized is the ***adequacy*** of the "legacy" electronic product technical data package used for the solicitation / bidding / manufacture of the required Circuit Card Assembly (CCA).

The great majority of the "legacy" electronic product technical data packages (consisting of aperture cards with microfilm images of the Original Equipment Manufacturers (OEMs) engineering drawings) are inadequate as previously stated / discussed.

Digitization only of the "legacy" aperture card set of engineering drawings for a specific CCA, and just using these digital files of the less than adequate technical information and data contained in an electronic commerce / Electronic Data Interchange (EDI) process will not / does not improve the situation. The inadequacies and problems are still presented to the prospective bidders.

The upgrading, enhancement, reformatting, and digitization of a problem aperture card electronic product technical data package into the EPDDS interactive / multimedia format / configuration completely eliminates the aforementioned problems and inadequacies, making the technical package suitable for risk free electronic commerce

and / or EDI. It should be noted that the EPDDS can be used in the ANSI EDI X12 Specification's "841" Transaction Set's "Binary / Free Form Text" Section for Technical Specifications.

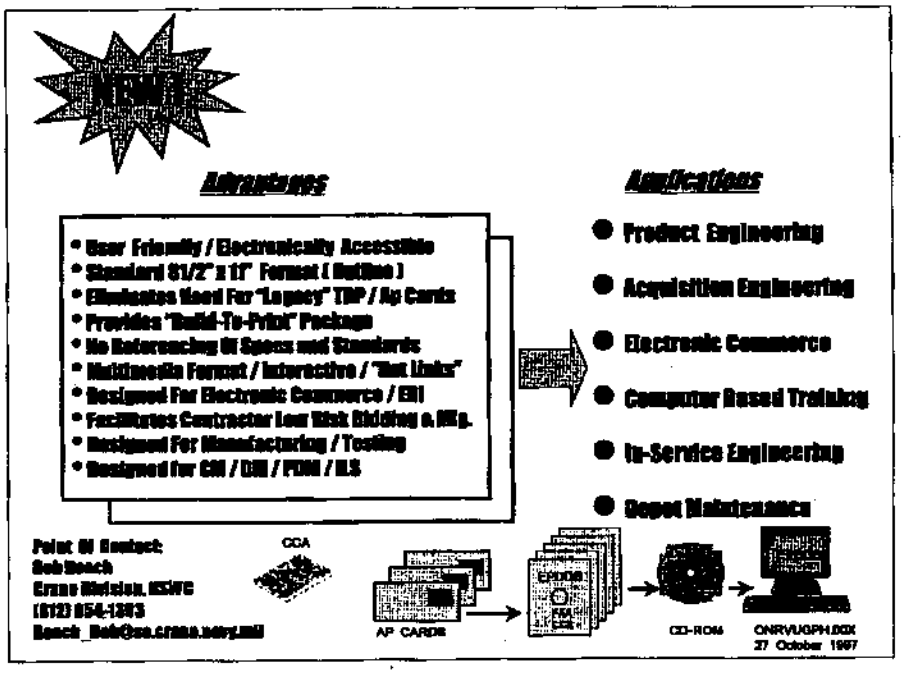

Figure (9) summarizes the concept and use of the EPDDS in a "paperless" product engineering / acquisition engineering / electronic commerce / Integrated Logistics Support (ILS) environment.

For the purposes of this DLA CATT Program Phase IV Demonstration, the development and use of the EPDDS on the Open Text, Inc., "LIVELINK" Intranet Information / Knowledge Management System in an Electronic Commerce environment, provide a solid alternative for"paperless acquisition", using a true "open systems" approach.

Summary:

With the final design of this demonstration pending the procurement of the Open Text, Inc., "LIVELINK" Intranet software tool suite and technical support, for the purpose of establishing, testing, and operating the demonstration workflows, with collaboration by all involved, an evaluation of the performance of the process architecture / model developed can be made

for the benefit of the CATT Program Executive Management Board (PEMB) membership.

After the successful demonstration of this model for an alternative "paperless acquisition" system, the technology and model developed will be transferred to any DOD and Government Agency requiring such a "niche" methodology / service.

It is envisioned that the "paperless acquisition" process discussed in this paper could become a Navy / DOD Standard Procurement System (SPS) "Tool".

For additional information concerning the DLA CATT Project browse the CATT Project Website at :
< http://catt.bus.okstate.edu/catt2/ >

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